Feb. 13, 1968 M. A. ROWE 3,368,466

LONGITUDINAL STRIKE-OFF AND FINISHING SCREED FOR CONCRETE

Filed Oct. 19, 1965 3 Sheets-Sheet 1

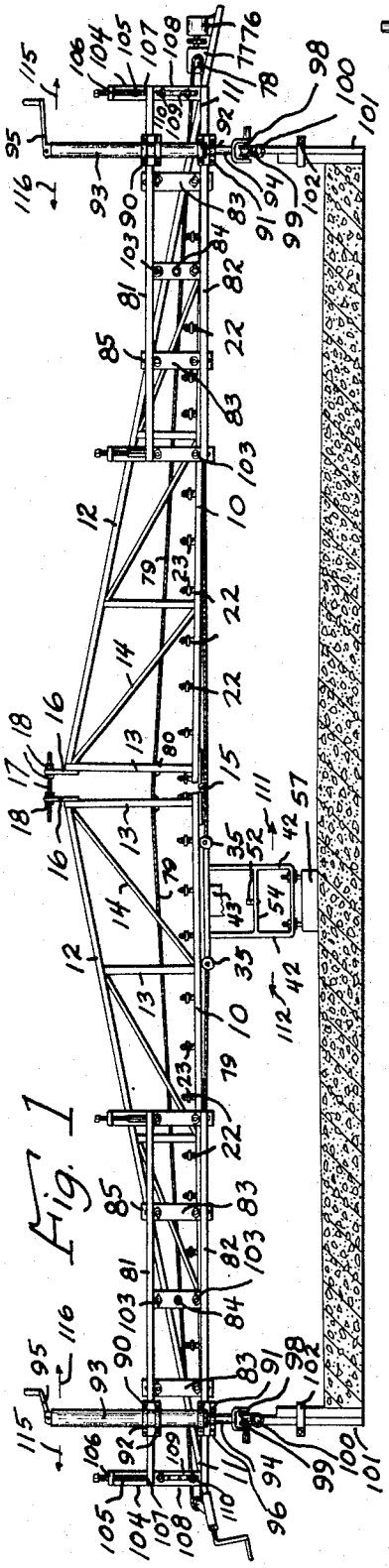


Fig. 1

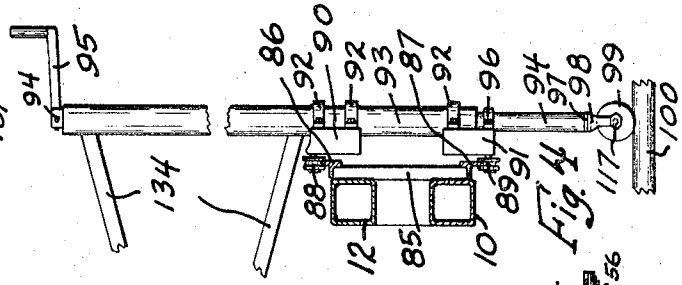


Fig. 4

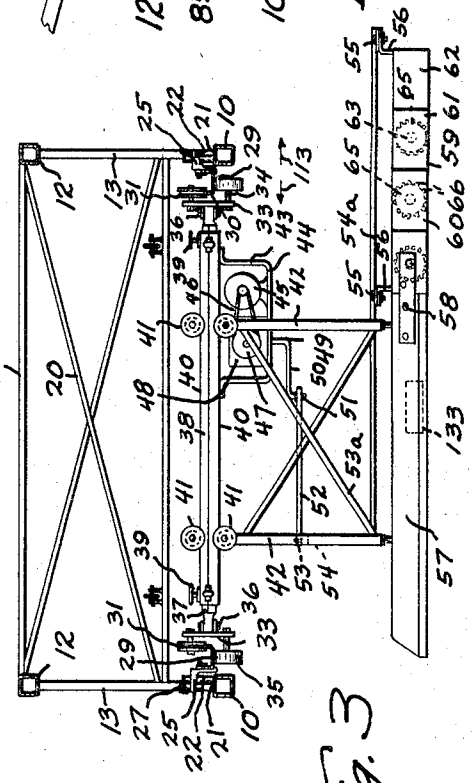


Fig. 3

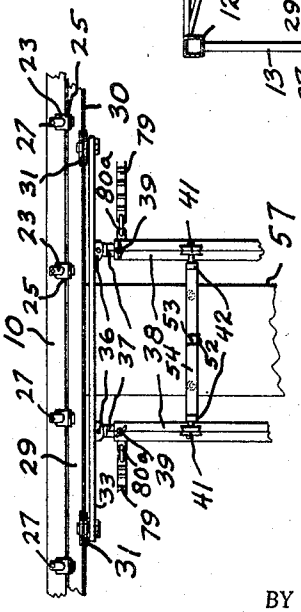


Fig. 2

INVENTOR.
Murray A. Rowe
BY
Sam J. Slotsky
ATTORNEY

Feb. 13, 1968 M. A. ROWE 3,368,466

LONGITUDINAL STRIKE-OFF AND FINISHING SCREED FOR CONCRETE

Filed Oct. 19, 1965 3 Sheets-Sheet 2

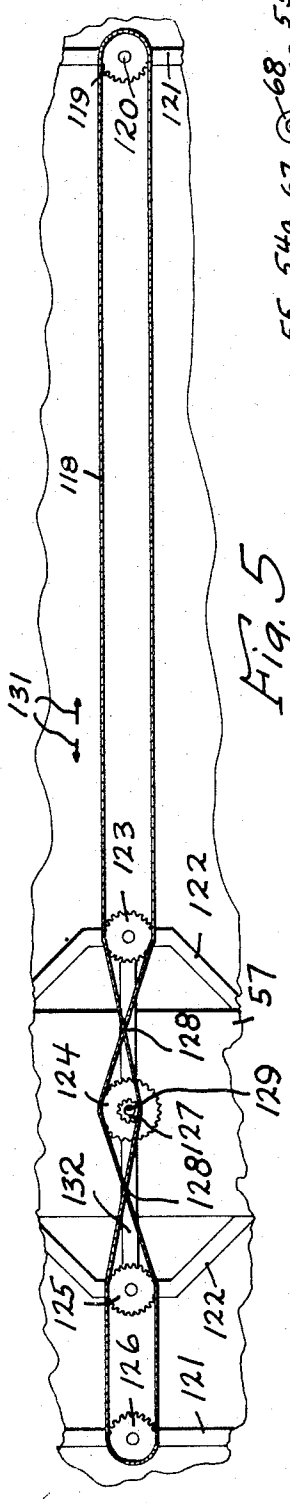


Fig. 5

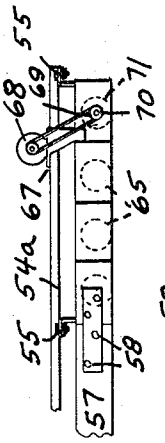


Fig. 9

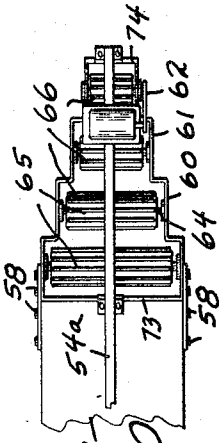


Fig. 10

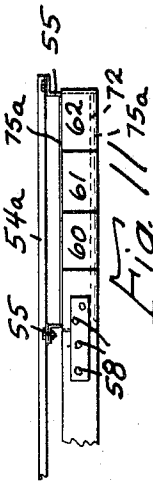


Fig. 11

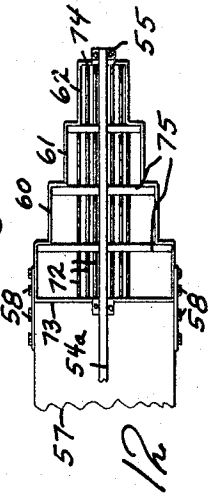


Fig. 12

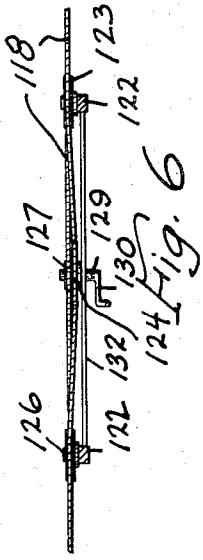


Fig. 6

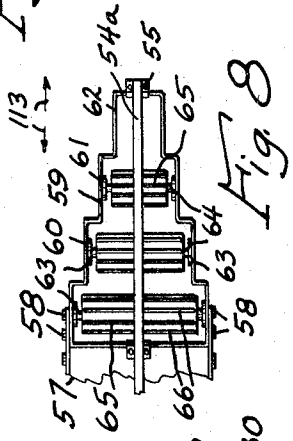


Fig. 8

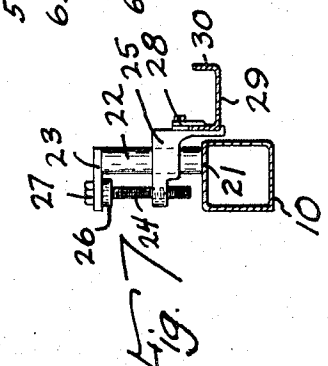


Fig. 7

INVENTOR.
Murray A. Rowe
BY
Sam J. Slotky
ATTORNEY

Feb. 13, 1968 M. A. ROWE 3,368,466

LONGITUDINAL STRIKE-OFF AND FINISHING SCREED FOR CONCRETE

Filed Oct. 19, 1965 3 Sheets-Sheet 3

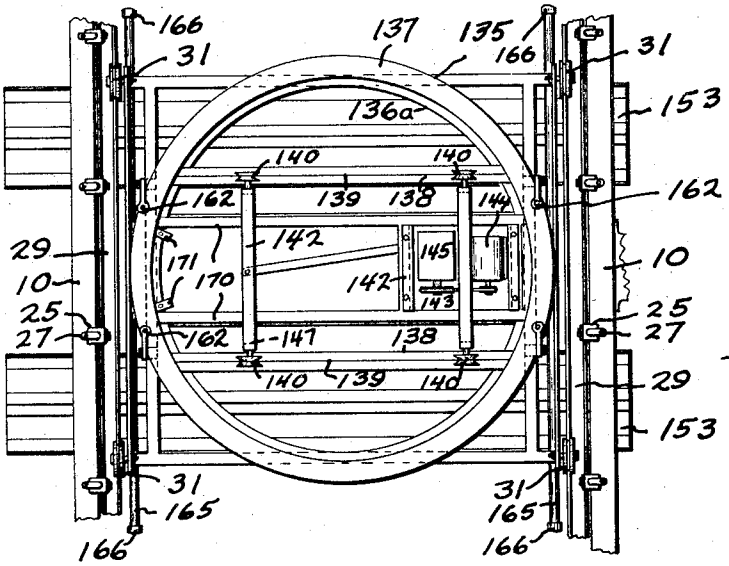


Fig. 13

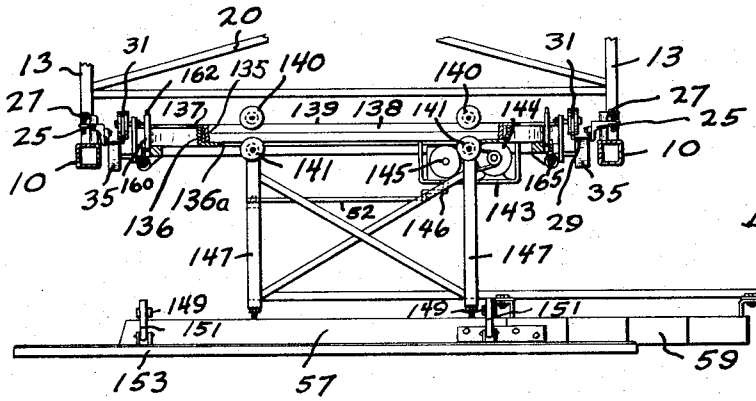


Fig. 14

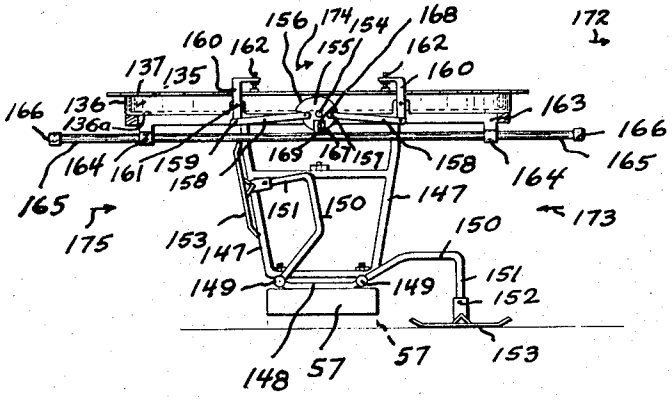


Fig. 15

INVENTOR.
Murray A. Rowe
BY
Sam J. Slotsky
ATTORNEY

United States Patent Office 3,368,466 Patented Feb. 13, 1968

3,368,466

LONGITUDINAL STRIKE-OFF AND FINISHING SCREED FOR CONCRETE

Murray A. Rowe, Canton, S. Dak. 57013

Filed Oct. 19, 1965, Ser. No. 497,943
3 Claims. (Cl. 94—45)

ABSTRACT OF THE DISCLOSURE

An improvement for power driven finishing screeds for concrete roadways, bridge surfaces and the like including particularly a rotatable and vertically adjustable carrier for the finishing member which allows use of a bull float and a troweling member either at the same time in combination, or the troweling member alone, and at various angles of traverse across the roadway surface.

My invention relates to a cement finishing device.

An object of my invention is to provide an arrangement for finishing off concrete on bridges, highways, or other locations.

A further object of my invention is to provide an arrangement which opeartes automatically, and smoothly finishes off the concrete, and with the required slope on the concrete.

A further object of my invention is to provide a supporting structure which can be adjustably narrowed or widened consistent with the width of the roadway, and with further means for adjusting the angle of the device.

A further object of my invention is to provide adjustable arrangements wherein the truss structure can be rigidly adjusted to the required angle.

A further object of my invention is to provide an arrangement which provides a positive strike-off of the concrete.

A further object of my invention is to provide certain bull-float arrangements for uniformly finishing off the concrete.

A further object of my invention is to provide a special drive arrangement for simultaneously providing the bull-float drive and the reciprocating movement of the bull-float carriage.

A further object of my invention is to provide a special raisable unit including troweling members.

With these and other objects in view, my invention consists in the construction, arangement, and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

FIGURE 1 is a cross section of a roadway or bridge showing the operation of the apparatus on the same,

FIGURE 2 is an enlarged plan view of a portion of the bull-float device,

FIGURE 3 is a transverse sectional view of the truss work showing the reciprocating bull-float member,

FIGURE 4 is an enlarged detail of the side adjusting arrangements,

FIGURE 5 is a plan view of my special drive arrangement,

FIGURE 6 is an elevation of a portion of FIGURE 5,

FIGURE 7 is an enlarged detail of one of the slope adjusting members,

FIGURE 8 is a plan view of an end portion of the bull-float member,

FIGURE 9 is a side elevation of a modification of FIGURE 8,

FIG. 10 is a plan view of FIGURE 9,

FIGURE 11 is a side elevation of a modified form of the bull-float,

FIGURE 12 is a plan view of FIGURE 11,

FIGURE 13 is a plan view of a modification,

FIGURE 14 is a side view of FIGURE 13, with fragmentary sections, and

FIGURE 15 is a further side view of FIGURE 13.

My invention contemplates the provision of a strike-off and cement finishing arrangement which can be mounted transversely on a roadway, bridge, etc., and wherein the device will be suitably powered and driven to smooth the concrete thereon and to provide further advantages as will be apparent.

In describing my invention I have used the character **10** to designate square-in-section tubular members to which are attached at **11** the further similar members **12**, the characters **13** and **14** indicating bracing members, the members **10** being hinged together at **15**, and attached to the members **13** are the straps **16** through which straps pass the threaded studs **17** engaged by the nuts **18**, this structure providing means for setting the pitch as desired to the members **10**.

The characters **19** and **20** (see FIGURE 3) indicate further bracing rods, and attached at **21** (see FIGURES 3 and 7) to the members **10** are the vertically positioned posts **22** to which are attached the straps **23**, the character **24** indicating a series of spaced threaded studs threadably engaged with the ears or lugs **25** which lugs slidably receive the posts **22**, the character **26** indicating collars, and the character **27** indicates the heads or the studs or bolts **24**. Attached at **28** to the lugs **25** are the channel members **29** having the vertical ribs **30**, and engaging the ribs **30** are the various grooved wheels **31** (see FIGURE 3) which are attached to the short shafts **32** which are attached to the plates **33** to which are attached the further shafts **34** upon which shafts **34** are journaled the wheels **35**, the wheels **35** engaging the channel members **29** as shown in FIGURE 3.

Pivotally attached at **36** to the members **33** are the male square members **37** which are received within the female square tubes **38**, the character **39** indicating set screw members for tightly engaging the members **37** and **38** at selected positions.

Engaging the upper and lower edges **40** of the members **38** are the grooved wheels **41** suitably secured to the supports **42**, and attached across the members **38** are the bracket supports **43** having a platform portion **44** upon which is mounted an electric or other motor **45** which drives the belt **46** which in turn drives the pulley **47** and a suitable gear arrangement within the housing **48**, this gear arrangement being adapted to drive the shaft **49** having the eccentric portion **50** which portion **50** is pivotally attached at **51** to a rod **52** which is pivotally attached at **53** to the brace **54** attached between the vertical supports **42**, the character **53***a* indicating further braces, the character **54***a* indicating a lengthened strap attached at **55** to the members **56** which are secured to the bull-float member indicated generally by the character **57** and which can be of a substantially hollow construction to which is attached at **58** the member **59** having the successive reduced portions **60**, **61**, and **62**, and journalled in these portions as at **63** are the shafts **64** to which are attached the drum shaped rotatable members **65** to which are attached the peripherally arranged rods **66**.

A further bull-float construction which can be used alternately with the construction shown in FIGURE 8 is that shown in FIGURE 9 wherein a platform **67** to which is attached a small motor **68** is used the platform being suitably attached to the member **62**, the motor **68** driving a pulley **69** which drives a forward shaft **70** upon which is mounted a further roller **71** substantially similar to the members **65**.

A further modification of the bull-float member is shown in FIGURES 11 and 12 with identical characters

indicating identical parts and in this structure the character **72** indicates a series of spaced plates attached between the walls **73** and **74** etc., the character **75** indicating bracing members. The character **75***a* indicates plates which can be inserted between the members **73** and **74** (see FIGURE 11) which will be used when the members **65** are removed.

Attached across the members **12** (see FIGURE 1) is a motor **76** which is adapted to drive a reduction gearing at **77** which in turn drives a sprocket **78** which engages the endless sprocket chain **79** which passes over suitable pulleys at **80**, the sprocket chain **79** being attached at **80***a* (see FIGURES 2 and 3) to the members **38**.

Further framework members which are attached to the ends of the truss-like structure above described include the upper and lower bars **81** and **82** connected to the vertical straps **83**, certain of the straps **83** being pivotally mounted at **84** to substantially similar straps or supports such as **85** and attached across the various supports **85** are the upper and lower rails **86** and **87**, and engaging the rails **86** and **87** are the small grooved wheels **88** and **89** (see FIGURE 4) which are secured to the blocks **90** and **91** to which are clamped at **92** the vertically positioned tubes **93**, and threadably engaged within the tubes **93** are the lengthened inner rods **94** which are rotated by the handles **95**, the character **96** indicating a clamp adapted to secure the inner member **94** in adjusted position, and attached at **97** to the bottom of the members **94** are the U-shaped members **98** in which are journalled the grooved wheels **99** which are adapted to travel along the screed pipes **100** which are secured to the braces **101** attached as at **102** to suitable supports adjacent to the concrete.

The character **103** indicates studs and washers attached to the various members **85**, the studs passing through slots in the members **83** to provide for swinging movement of the framework members **81**, **82** and etc. for adjustment.

The character **104** indicates vertically positioned straps attached to the members **12**, the character **105** indicating lengthened threaded studs threadably engaged at **106** and bearing at **107** on the members **81** to secure the frameworks **81**, **82**, etc. in selected position, the character **108** indicating further straps attached across the members **81** and **82**, and having the slots **109** therein through which pass the studs **110** with suitable bolts attached thereto for additional securing means.

It will be noted from the foregoing structure that the sprocket chain **79** when operating will carry the framework having the bull-float in either the direction **111** or **112** (see FIGURE 1). The bull-float members can be angularly positioned as desired by means of adjusting the set screws **39** and relocking the same, and it will be noted particularly that the eccentric member **50** will provide means whereby the bull-float member will reciprocate back and forth in the direction of the arrows **113** (see FIGURE 3) as the bull-float travels in direction of the arrows **111** or **112**. In other words the bull-float will reciprocate in a direction parallel to the longitudinal axis of the roadway which is indicated by the character **114**.

By moving the members **93** in either direction **115** or **116** the wheels **99** can be set at any pre-selected position laterally to thereby accommodate wider or narrow roadways and the like, since the rollers **88** and **89** can be rolled along the tracks **86** and **87** to pre-selected position.

If desired a connecting arrangement can be provided at **117** (see FIGURE 4) for engaging a suitable motor.

It will be noted that due to the horizontal positioning of frameworks **81**, **82**, etc., the members **93** will be maintained in vertical positions at all times so that the rollers **99** will not converge downwardly, and it will be further noted that this structure **81**, **82**, etc. can be sligthly angularly positioned in order to compensate for any difference in angle of the roadways etc.

The adjusting members shown in FIGURE 7 can be used to adjust the tracks **29** to the desired pitch of the roadway by merely rotating the heads **27**, and which will additionally secure the pitch at either side.

The drum shaped members **65** which will rotate freely, and will serve to even the cement, and the successive reduced portions **60**, **61**, and **62** also tend to even out the cement during each forward or rearward thrust of the bull-float member, the modification shown in FIGURES 9 and 10 also showing a similar purpose as well as the modification shown in FIGURES 11 and 12.

FIGURES 5 and 6 illustrate a modification wherein an endless sprocket chain is indicated by the character **118** which can be suitably driven by the sprocket **119** through the shaft **120** through a suitable power source, the characters **121** and **122** indicating support braces, the characters **123**, **124**, **125**, and **126** indicating further sprockets journaled as shown and engaging the chain **118**. The character **127** indicates a smaller sprocket engaging the chain **118**, it being noted that the chain is reversed at **128**.

The sprocket **127** drives a shaft **129** which drives an eccentric member **130** which in turn drives the bull-float above described.

It will be noted by this construction that as the chain travels in one direction, and since the sprocket **127** is engaged in the manner shown with the crossed over chain structure, the tendency will be for the bull-float member to travel in either direction **131** and at the same time the eccentric **130** will be operating the bull-float member. The character **132** indicates a further brace.

The character **133** indicates a suitably driven vibrator (see FIGURE 3) which can be used if desired. The character **134** indicates bracing between the members **93**.

It will be noted that the members **93** can be positioned at all four corners of the truss-work in the desired spaced relationship as explained, and that the pitch of the channels **29** can be adjusted as desired, and in connection with the auxiliary frameworks **81**, **82**, the members **93** will normally be in a true vertical position regardless of the pitch of the channels **29**.

FIGURES 13 to 15 inclusive illustrate a modified form of structure wherein identical characters will indicate identical parts, this structure however pertaining to a special arrangement wherein the finishing off lower screed surface can be raised and with certain troweling elements being lowered to trowel the surface.

In describing this form of my invention, I have used the character **135** to indicate an inner ring of angle section material supported on an outer ring **136** of similar material, the ring **135** having an outwardly extending circular flange **137**. The outer ring **136** also has a flange **136***a* extending inwardly to a radius within the inner ring as best shown in FIGURES 13 and 14.

Attached across the ring **135** are the square tubes **138** having the upper edges **139** which engage the rollers **140** and **141**, these rollers being adapted to reciprocate or roll rearwardly and forwardly along the edges **139** to provide for the reciprocating movement of the lower screed portions, it being noted that in this arrangement the ring shaped members are used instead of the structure used in FIGURES 1, 2, 3 etc.

The character **142** indicates transverse braces, the character **143** indicating a platform suspended therefrom upon which is mounted the motor **144** and other members **145** etc. adapted to drive the crank arm **146** which in turn operates the screed similar to the unit described above, the character **147** indicating further supporting braces and the like to which the rollers **140** and **141** are attached. The lower screed portions are substantially the same as that described above with the exception that mounted above the member **57** are the brackets **148** to which are pivoted at **149** the arms **150** having the portions **151** to which are secured at **152** the troweling members **153**.

Pivoted at **154** to the outer stationary ring **136** are the cam members **155** having the cam portions **156**, and pivoted to the cam members **155** at **157** are the links **158** which are pivoted at **159** to the levers **160** pivoted at **161**,

the levers 160 carrying the adjustable set screw clamps 162 which are normally adapted to bear against the flange 137.

The framework portion 163 is attached to the stationary ring 136 and includes the bearings 164 in which are slidably received the lengthened rods 165 having the abutment ends 166. Attached to the rods 165 are the ears 167 having the slots 168 engaging the pins 169 which pins are attached to the cams 155.

The character 170 indicates further bracing members, and the character 171 indicates clamping units for preventing relative rotation between the rings 136 and 135.

This latter described arrangement is used in the following manner. Whenever it is desired to use the troweling elements 153 only, without the other lower screed portions, any type of abutment member is attached to any of the stationary framework portions 10 or the like, and in a position so that they will be contacted by the members 166. For instance, assuming that the unit is traveling in the direction of the arrow 172 (see FIGURE 15), when the abutment members 166 abut against the fixed abutment members, the tendency will be to force the rods 165 in the direction of the arrow 173 which will cause the cam 155 to rotate in the direction of the arrow 174 which will cause the cam surface 156 to raise the flange surface 137 which will then completely raise the entire reciprocating screed structure, and so that the troweling members 153 will thereby operate independently of the screed lower portions, and the troweling can then be accomplished when the unit trowels in a reverse direction with either one of the troweling units 153 being used or both, as desired, and as soon as the abutment members 166 at the other sides of the rods 165 strike further fixed abutment members at the other side of the truss, the rods will then move in the direction of the arrow 175 which brings the cams 155 to the solid line position again so that the screed surfaces will be lowered and can be used in the usual manner, and in this way the unit can be selectively used for either purpose.

The dotted lines in FIGURE 15 show the screed member 57 when in its normal position and before the cam 155 has rotated to raise the unit, the solid lines showing the unit in the raised position.

It will be noted that the rods 158 will also pivot to swing the levers 160 and raise the attached devices 162 at the same time that the cams operate.

The rings 135 and 136 also permit an arrangement whereby the various screed members can be positioned at any angle desired, by merely rotating the ring 135 with respect to the ring 136.

It will now be noted that I have provided the advantages mentioned in the objects of my invention, with further advantages being apparent.

Some changes may be made in the construction and arrangement of the parts of my invention without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. A concrete finishing machine comprising a laterally positioned truss work, carriage means movably mounted on said truss work, a first ring fixed to said carriage means, a second ring slidably and rotatably mounted inside said first ring, adjustment means engaged between said first and second rings to hold said rings in an adjusted vertical position relative to each other, and a lower cement surfacing unit attached to said second ring whereby said surfacing unit can be adjusted vertically and rotationally with respect to said truss work.

2. The device of claim 1 in which said adjustment means engaged between the first and second rings includes cam members mounted on said first ring and bearing against said second ring, abutment means operably connected to said cam members to operate said cams upon engagement with said truss work.

3. The device of claim 1 in which said surfacing unit includes float means, troweling unit pivotally mounted to said float means and substantially parallel thereto, said troweling means being thereby adapted to remain in contact with said concrete when said float member is raised with said second ring.

References Cited

UNITED STATES PATENTS

2,434,408	1/1948	Huffman	94—45
3,208,361	9/1965	Bidwell	94—45

JACOB L. NACKENOFF, *Primary Examiner.*